Meeting Summary
RURAL LEVEE REPAIR CRITERIA WORK GROUP MEETING #4
AUGUST 27, 2013
Center for Collaborative Policy
815 S Street, 1st Floor Sacramento, CA

Contents

Summary of Action Items

1. Center for Collaborative Policy will send notes of today's meeting. (Due: Sept 3rd)
2. DWR will send members a word version of the 5.0 Description of Major Levee Repair Components for review and editing (Due: Sept. 3rd).
3. Members will provide additional comments on 5.0 Description of Major Levee Repair Components. (Due: Sept. 17th)
4. DWR will send members Draft RLRC document for review. (Due: Sept. 20th)
5. Next work group meeting is scheduled for Thursday, September 26th 1:00pm-4:30pm.

Kick Off and Welcome

Meeting Facilitator Adam Sutkus (Center for Collaborative Policy) welcomed members and interested parties to the meeting and led introductions around the room.

DWR Welcome and Opening Comments

Dave Wheeldon (RLRC Program Manager, DWR) thanked everyone for attending the work group meeting. The purpose of the fourth work group meeting is to refine the repair alternatives templates and narrative. DWR reviewed the templates, developed the narrative, and made revisions to reflect previous work group input. In addition, DWR is developing the narrative up-front section of the RLRC document. The up-front section will be available for work group members' review prior to the meeting in September.

The Central Valley Flood Protection Board (CVFPB) is expecting a draft RLRC in November. It is expected that this process will be wrapped up by the end of the year but there may be opportunities for future follow up depending on the Board's reaction to the RLRC document.

Agenda and Process Review

Mr. Sutkus reviewed the member packets which included the meeting agenda and ground rules, draft Q and A for RLRC, template and narrative descriptions of major levee repair alternatives, draft RLRC document table of contents, and an evaluation sheet.

Mr. Sutkus stated that the goal of the meeting is to review and refine the alternative repairs templates and accompanying narrative side by side.

Review of Draft Repair Templates

Overview

Mr. Wheeldon began by introducing the RLRC frequently asked questions handout. Throughout this process, there have been questions regarding the program's purpose and its role. DWR felt that it would be helpful to provide a frequently asked questions page on the RLRC website to address some of the questions, particularly regarding the intent of the RLRC document. Mr. Wheeldon asked the work group members to help identify additional questions that may be included in the handout.

Mr. Wheeldon introduced the template index which provides a summary of the alternative repair options that are considered in addressing specific distress mechanisms. In reviewing the templates and the narrative, Mr. Wheeldon asked member to keep in mind the link between the narrative and templates and consider the following three questions:

a. Is the level of detail appropriate?
b. Is narrative explanation sufficient?
c. Are all minimum requirements considered?

Mr. Sutkus reminded the work group that some issues have been identified as part of the up-front section of the RLRC document rather than part of the repair alternatives section. Mr.

Sutkus asked members to help identify any other issues that may need to be generalized and properly characterize in the up-front discussion.

Mr. Wheeldon pointed out that the naming convention of the templates has been revised to help identify the distress mechanism that repair alternatives address. For example, repair alternatives for through seepage are noted as TS. In addition, Section 5 will be renumbered in the RLRC document as Section 4.

Template Process Overview

Mr. Wheeldon reviewed each template and highlighted revisions. The following is a summary of work group comments and suggestions as they apply to each of the repair alternative templates.

Typical Rock Slope Protection Repair for Major Erosion (Template E-1)

Mr. Wheeldon highlighted the following revisions:

- The reference to mitigation of planting/vegetation for erosion control was removed.
- Soil fill rock reference was removed and pure rock below water surface levee was added.
- Reference to embankment fill, to bring back levee to its original geometry, was added.
- Top of elevation was adjusted.

Members comments and suggestions

- From a construction standpoint, it may be difficult to follow the variable eroding area. Instead, the area should be compacted first and then it is advisable to provide a straight line instead of the 6-inches strip erosion that is called out on the sketch.
- The rock should be brought up to the levee crown.
- Since this is a repair project, rock should not be added based on the design water surface. This requirement is a FEMA or ULDC standards and does not apply to this criteria.
- The requirement for compaction needs to be explained.
- The 24-inch minimum riprap requirement was questioned and the need to specify the rock size or depth was debated. It was suggested to call out 18 to 24-inches in the sketch and provide an explanation for the minimum thickness in the narrative.
- It may be helpful to provide two sketches E-1a and E-1b to differentiate the top detail based on how far the erosion extends along the slope.
- Fewer graphics are preferable if the differences can be highlighted in the narrative.
- The main concern is shaping the area, the refill, and how to close the top. The slope may not vary dramatically.
- The narrative should provide a discussion on acceptable surface water elevations.
- The description should not include design water elevation.

- A definition for the term 'mean summer water elevation' is needed. (This term is used by other programs and is considered a generic term).
- Launch Rock will be placed in-water to avoid the need for dewatering.
- The document should provide a distinction between the delta and other areas and clearly explain its limited application to rural levees.
- Laying foundation rock underneath launch rock is beneficial.
- This guidance addresses USACE 408 permit requirements. The 408 permit requirements are based on hydraulic capacity impacts and the need for a minor vs. a major permit will depend on the reduction in channel capacity. The 404 permit is a separate process.
- The narrative should include a generic statement regarding the need to consider other resource agencies permitting processes.

Typical Rock Slope Protection Repair for Minor Erosion (Template E-2)

Template E-2 depicts a condition in which the erosion profile does not impact the levee prism.

Members comments and suggestions

- This alternative requires the definition of the levee prism in the narrative.
- Levee prism can be calculated based on existing landscape.
- The narrative section should provide clarification on levee prism where calculation is based on landside slope and top height is based on 3-feet above surface water elevation.
- The RLRC is not intended to determine a specified level of protection and assessing water elevation for rural levees is not practical. Water surface elevation should be based on existing conditions.
- The reference to the levee prism is needed to distinguish between minor and major erosion conditions.
- The top of levee can be used as the uniform level of protection. Some members felt that this suggestion is too stringent.
- The definition of assessment surface water elevation needs to be explained in the narrative. It is unclear.
- Erosion, as shown in the sketch, encroaches the levee prism and therefore soil needs to be added to rebuild the prism.
- The prism is defined on the dry side of the levee but the hinge, as shown in the E-2, is on the water side. The narrative sketch 5-1 needs to be revised to match template E-2 to avoid confusion.
- The 3:1 slope on the water side as it applies to rural levees was questioned. Delta levees generally have a 2:1 slope. It was suggested that in template E-2 a note should be added to state that repair will match adjacent slope rather than provide a specific slope. The narrative sketch 5-1 should remain as is.

Typical Widened Levee Repair for Erosion (Template E-3)

Template E-3 addresses erosion distress mechanism for a widened levee. The template was revised based on members' suggestion to call out embankment fill permeability with equal or greater permeability than existing levee.

Members comments and suggestions

- The bench slope, as shown in template E-3, may be applied to template E1.
- It is a challenge and may be impractical to have a straight line or a bench slope. Instead, it may be sufficient to state 'remove undesirable materials'.
- The intent of scraping beyond erosion is to have competent material.
- The scraping and filling is a constructability issue that should be left to the discretion of the contractor. The focus in the RLRC should be the compaction level.
- The proper compaction is a geotechnical issue and is practical for this repair.
- Note 4 addresses the bench requirement sufficiently.
- AB surface should be changed from '6-inches' to 'existing or 4-inches minimum'.

Typical Drained Berm Repair for Underseepage (Template US-1)

Mr. Wheeldon highlighted the inlet and minimum cover details.

Members comments and suggestions

- In the delta, this repair does not work. A reference was made to Mildred Island where the Reclamation District had tried different repair alternatives including the one shown in the template unsuccessfully.
- A distinction was made between seepage conditions and a levee failure (water velocity is high enough to move materials from under the levee). Sand boils on the land side may indicate levee failure.
- The 4H requirement is inappropriate for rural levee repair, especially since there are no specific performance requirements. The rural levees are not engineered and therefore are not uniform and without an exit gradient.
- The 4H requirement is set without an Engineering analysis as guidance. An Engineering analysis can be used to reduce the seepage berm width. The narrative can provide additional explanation.
- A language may be added in the narrative to explain that a berm may not resolve the seepage problem.
- The need for information was questioned since the RLRC intent is to not impose geotechnical analysis or other detailed investigations. The narrative lacks explanation of how information may be used.
- In the case of seepage it is important to know the cause and existing conditions prior to implementation of repair alternatives and therefore some analysis will be needed.

- The intent of the RLRC was to provide repair alternatives to local agencies without requiring an Engineering design. The narrative may provide explanation on how information can be used to further the repairs.
- The up-front narrative section may need to include a disclaimer that site specific conditions may require deviation from the RLRC.
- The up-front narrative section should clarify the intent of the document.

Typical Undrained Berm Repair for Underseepage (Template US-2)

Members agreed that the term 'undrained' is appropriate for template US-2. Changes in template US-1 were previously included in revising template US-2. The reference to existing permeability may require some analysis prior to the selection of fill material. Mr. Wheeldon asked the work group if it would be appropriate to revise note 3 to state that sand or greater permeability material be used.

Members comments and suggestions

- The analysis is simple and necessary and should be left to the contractor.
- The RLRC scope is limited to improving rather than resolving distress mechanisms. The RLRC should be approached as DWR guidance not a requirement.
- It was agreed that Note 3 is appropriate.
- The reference to 'gap graded materials' in Note 2 is acceptable.

Ditch Canal Fill and Relocation for Underseepage (Template US-3)

Mr. Wheeldon asked member to address the practicality of the repair as presented in template US-3.

Members comments and suggestions

- The narrative discussion on page 5-10, Implementation Guidance section, bullet 1 should be revised. (Ran Singh, DWR will provide suggested language)
- The narrative discussion on page 5-10, Implementation Guidance section- introductory sentence should be revised to explain the role of helpful information and the role of RLRC as guidance.
- The narrative description should include the option of using solid wall drainage pipe to move water through irrigation ditch.
- The intent of this repair option is to capture seepage. An analysis of a full ditch may be needed to assess the conditions.

Typical Drained Toe Berm Repair for Through Seepage (Template TS-1)

Mr. Wheeldon stated that comments from the previously discussed templates for drained conditions will be considered in revising template TS-1, including foundation seepage berm. An important distinction in template TS-1 is the relationship between the phreatic line and the fill line.

Members comments and suggestions

- The narrative discussion should include an explanation that an analysis is not needed to determine the phreatic line; the phreatic line may be estimated based on where water comes out.
- Geotextile materials, embankment, and other key terms need to be explained in the up-front narrative discussion.

Typical Toe Berm Repair for Through Seepage (Template TS-2)

Template TS-2 provides a variation to TS-1 where the fill height is intended to capture the height of the phreatic line.

Members comments and suggestions

- The depth of 3-feet excavation should be revised to ½ -foot.
- The narrative discussion page 5-15, Implementation Guidance, bullet 1 should be revised and reference to seepage analysis removed. (Ran Singh, DWR to provide suggested language).

Typical Drained Stability Berm Repair for Slope Stability (Template SS-1)

Template SS-1 provides an alternative with bigger drain seepage berm. Comments from previous discussions will be applied to this template. In particular, terminology and reference to berm fill and embankment fill will be considered for consistency.

Members comments and suggestions

- The term embankment fill is appropriate for this repair alternative.
- The narrative discussion should explain the difference between berm fill and embankment fill and define the appropriate applications.
- The narrative discussion should explain that assessment can be applied to reduce the height of stability berm (referenced as 3-feet in Note 1).

Typical Undrained Stability Berm Repair for Slope Stability (Template SS-2)

Template SS-2 provides a similar approach to SS-1 but without the drain. Comments provided for template SS-1 will be considered in revising template SS-2.

Members comments and suggestions

- The term berm fill is appropriate for this repair alternative. Narrative discussion should explain the two different types of fills and their application.
- A note should be added to specify a minimum excavation width of 2-feet.
- The stripping depth needs to be defined but may not need to be 6-inches.
- Note 3 should be revised to be read as guidance rather than absolute requirement. Assessment of water level elevation can be used to reduce the height of the berm.
- The term assessment water surface elevation needs to be defined.

- Chapter 3 in the narrative up-front discussion will clarify that the intended level of repair is at the discretion of the local agencies.

Typical Partial Levee Replacement Repair for Slope Stability (Template SS-3)

Template SS-3 was changed and reflects work group members recommendations.

Members comments and suggestions

- 2-feet of pervious material should be added on top of fill.
- Fill materials should be of equal or greater permeability than existing materials. Freeboard material should be impervious, may be called out as clay, and serve as a plug. These changes should be reflected in the sketch.
- Minimum excavation should be revised to ½-foot.
- The sketch should show the slip plane or existing failure profile.
- The height of the plug (impervious layer) should be based on water surface level assessment.
- This sketch should reflect a guidance approach and is not intended to be used as a design drawing. A note may be added to suggest that cutting too far into the levee may violate the integrity of the levee.
- This is a complex repair and specific considerations may be best explained in the narrative discussion rather than the sketch.

Typical Combination Drained Berm Repair for Seepage Stability (Template COM-1)

The challenge of this repair alternative is problem identification. Comments from previous discussions may be applied to this template to ensure consistency with terminology used.

Members comments and suggestions

- The sketch has two berm widths. The width reference should be changed from 'varies' to '10-feet minimum'.

Typical Combination Undrained Berm Repair for Seepage Stability (Template COM-2)

Comments from previous discussions will be applied to template COM-2. The narrative for this alternative is too short and needs to be expanded.

Typical Repair for Crown Depression (CD-1)

Members comments and suggestions

- The representation and note regarding the width of the crown needs to be revised. Currently, the crown is shown as raised and does not match the existing crown.
- A note should be added to suggest that side slope may have to be adjusted to reflect existing prism.

Review of RLRC TOC and Additional Items for Discussion

Key terms definitions

Mr. Wheeldon reiterated the importance of providing definitions of key terms both in the appendix and within the up-front narrative discussion.

Delta levees

A member commented regarding the lack of discussion on delta levee conditions, specifically subsidence. There are rural levees in the delta that are affected by deep peats and rapid subsidence and the criteria does not provide guidance for addressing these issues.

Mr. Wheeldon responded that the criteria addresses general distress mechanisms. The up-front narrative discussion can explain that these specific conditions, as they relate to Delta levees, are not covered by the repair alternatives that are outlined in the RLRC and that additional analyses will be required. In many cases, rural levees are riverine levees whereas delta levees are more frequently loaded and therefore delta levee are more likely to require major and not minor repairs.

Up-front narrative section review

Mr. Wheeldon asked members to review the narrative section and help identify additional topics such as seismic consideration and subsidence that should be discussed in the document. The background and introduction section of the RLRC will be based on the work group charter. Chapter 3 of the document will explain the criteria purpose and how the templates are intended to be used. Frequently asked question will be posted on the website.

A member asked how animal hazards repair will be addressed in the RLRC?

Mr. Wheeldon replied that animal hazard repair may be addressed in a separate section.

Concerns were raised over right-of-way issues as they affect local agencies' ability to repair levee. There was a disagreement among members whether right-of-way issues should be included in the RLRC.

A member stressed the importance of ensuring that the document is readable to ensure that it is useful to local management agencies. The document should highlight important context.

Agricultural interests

Mr. Wheeldon asked members if additional outreach is needed to inform the agricultural community regarding the RLRC work group process.

A member suggested developing public webinars to educate and explain the risk of bad levees as a follow up to this process. Another member suggested that information can be disseminated through existing regional planning processes. Several members shared the opinion that once the criteria is developed, there may be existing processes and venues where the RLRC can be shared.

Mr. Wheeldon reiterated that this process does not address earlier questions about streamlining the permitting process. The templates may be helpful in laying out what is necessary for the permitting process but it is only guidance.

Next Steps

Mr. Wheeldon asked members to focus their attention on the repair alternatives narrative section. Members will be provided with a word version of the narrative section to allow tracking of suggestions. Comments need to be provided by September 10th to ensure sufficient time for DWR to address members' comments. Mr. Wheeldon encouraged members to continue and review the templates for completion.

DWR is working on the up-front section narrative and will provide a draft RLRC document for review prior to the next work group meeting.

Mr. Wheeldon thanked the work group for participating and contributing to the process.

The next RLRC work group meeting is scheduled for Thursday, September 26th 1:00pm-4:30pm (location to be determined).

Attendance

Name	Affiliation
Work Group Members	
Albertson, Gary	PMA Sacramento
Bair, Lewis	RD 108
Bradner, Graham	GEI Consultants
Cosio, Gilbert	MBK Engineers
Countryman, Joe	CVFPB, Board member
Hartmann, George	RD 2030
Labrie, Gilbert	DCC Engineering
Larson, Ryan	USACE
Perlea, Mary	USACE
Porbaha, Ali	CVFPB
Stadler, Steven	Kings River Conservation District
Sullivan, Steven	Mead and Hunt, Inc.
Interested Parties	
Chowdhry, Khaled	URS
Hollister, Nekane	DFM-FP11B
Millet, Richard	DWR Geo-Levee
Owaidat, Louay M.	Magnus Pacific
DWR ULOP Team	
Wheeldon, Dave	DWR-FMO
Ara, Syada	DWR-FMO
Singh, Ran	DWR-FMO
Sun, Yung-Hsin	MWH Americas, Inc.
Sutkus, Adam	CCP
Kalman, Orit	CCP